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ABSTRACT

In a study of how teacher reinforce learners it was hypothesized that teachers' sanctioning behavior will vary in a given teaching task depending on 1) their tendency to be anxious (their need to avoid failure), 2) their perception of the competence of the student, and 3) the difficulty of the material to be mastered. Forty undergraduate teacher trainees, who had previously been administered the Test Anxiety Questionnaire for division into high anxious and low anxious groups, were required to teach a student on a concept formation task. The student to be taught was a confederate whose performance was determined a priori and was the same for all teachers. Each teacher was set to expect a certain level of performance by his "student" through instructions regarding the difficulty of the task and the competence of his student. A 2 x 2 x 2 factorial design was employed with two levels each of anxiety, student competence, and task difficulty. Teachers were assigned randomly within each anxiety level to the four conditions. Each teacher presented the concept through a series of stimulus cards he gave to the student (behind a screen). Upon receiving each student response card he exercised his option of five responses in the form of reward and punishment tokens. Positive and negative reinforcements of teachers were analyzed separately. Data after analyses of variance came out as predicted but not significantly so. (Implications are discussed.) (JS)

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THE REINFORCEMENT BEHAVIORS OF TEACHERS-IN-TRAINING

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THE REINFORCEMENT BEHAVIOR OF TEACHERS-IN-TRAINING

This paper presents the results of an exploratory study on the sanctioning behavior of prospective teachers. While a number of studies have focused on the effects of various teacher behaviors, there have been relatively few investigations of the variables that influence the reinforcements a teacher might administer. As Rothbart (1968) points out, "virtually no research has examined the way in which people actually use reward and punishment to modify another's behavior, even though many social relationships, such as those between parent and child, teachers and students, and supervisor and worker, are characterized by an interaction pattern in which the person of greater power attempts to influence the other's performance by use of incentives."

The few studies that have dealt with the reinforcing behavior of trainers as a dependent variable have revealed a number of pertinent findings. Milgram (1964) has shown that social pressure can modify the level of punishment employed by a trainer. Dustin and Davis (1967) have found that the personality characteristics of trainers affect their sanctioning behaviors. More recently, Lanzetta and Hannah (1969) demonstrated that extraperformance variables such as the perceived ability of the learner and the difficulty of the learning task influence the reinforcements administered by "naive" trainers. As Lanzetta and Hannah point out, "teachers often praise mediocre performance of one pupil because he tried hard while the identical behavior by another is criticized because of poor effort." They concluded that the

reinforcing behavior of the trainers in their study was affected by extraperformance variables as predicted by attribution theory.

Our study is based on and is an extension of the work of Lanzetta and Hannah. What we attempted to do was combine the separate strategies of Dustin and Davis (1967) with those of Lanzetta and Hannah. In effect, we followed the approach of Endler and Hunt (1966) who maintain that the proportion of variance of behavioral data accounted for by the interactions is so substantial that it is more meaningful to consider a problem in terms of what responses are being made by which people in what kinds of situations. Their position is similar to the one earlier espoused by Sarason (1960) and his colleagues. Accordingly, what we hoped to learn was how teacher-trainees identified as high anxious and low anxious reinforced learners they perceived to be competent or noncompetent on difficult or easy tasks. It was hypothesized that student performance per se does not determine a teacher's sanctioning behavior, but rather it is the teacher's affective state vis-a-vis situational variables that is relevant. As Jones and deCharms (1957) have noted, "when the focus of phenomenal causality is perceived as internal to the agent of frustration, negative evaluation is more severe and the perceived reason for an individual's failure is a crucial factor in any concurrent evaluation of him."

In the context of our study it was hypothesized that teachers who fear failure will respond differently to learners and situations which they perceive as threatening than to those which do not threaten them. A teacher is judged on many standards but

most plausibly on the supposed learning of his students. Student achievement is regarded as the ultimate criterion of good teaching, and if learning does not occur, or occurs at a less-than-expected rate, especially in an ideal situation of "good" students and relatively easy materials, it is often taken as a sign of teacher failure. It is hypothesized then that teachers sanctioning behavior will vary in a given teaching task depending on (1) their tendency to be anxious (their need to avoid failure), (2) their perception of the competence of the student, and (3) the difficulty of the material to be mastered.

METHOD

Experimental Design

Forty teacher-trainees (27 females and 13 males), enrolled in two undergraduate education courses at Syracuse University, were required as part of their course to teach a student on a concept formation task. The student to be taught was a confederate whose performance was determined a priori and was the same for all teachers. Each teacher was set to expect a certain level of performance by his "student" by providing him with instructions about the difficulty of the task and the competence of his student. The teachers had previously been administered the Test Anxiety Questionnaire (Mandler and Cowen, 1958) and divided into high anxious (H) and low anxious (L) groups by splitting at the median. The H group consisted of 14 females and 6 males; the L group, 13 females and 7 males. A 2 x 2 x 2 factorial design was employed with two levels of anxiety (H and L), two levels of student competence (competent, C, and noncompetent, NC), and two

levels of task difficulty (easy, E, and difficult, D). The teachers were assigned randomly within each anxiety level to the four conditions. There were thus eight conditions, each with 5 teachers: HEC, HENC, HDC, HDNC, LEC, LENC, LDC, and LDNC.

Apparatus

The apparatus consisted of a 4 x 8 foot wooden screen which separated the teacher from the student. At about desk level there was a slot in the screen through which the stimulus card was presented. On the teacher's side of the screen was a desk with piles of tokens of different sizes and colors representing monetary reinforcements as follows: 10 cents, 5 cents, 0 cents, -5 cents and -10 cents.

The stimulus cards were 12 drawings illustrating four facial expressions: smiling, surprise, doubt, and anger. The teachers in the easy-task condition had to teach his student to discriminate among the four expressions. The difficult-task condition required the learner to discriminate a series of very small dots placed in one of the corners of the stimulus cards. In all cases the dots had to be pointed out to the teacher and were perceived to constitute an extremely difficult task. On the back of each card was the nonsense-syllable name of the group to which the card belonged as well as a number from 1 to 12. The teachers used these numbers to present the cards in a random order according to a schedule provided by the experimenter.

Procedure

The teacher was brought into the room, seated at a table and

given the following instructions which are essentially those of Lanzetta and Hannah (1969).

This is an experiment dealing with the learning of concepts. A concept may be something defined socially, such as dogs and cats, etc., or it may be something defined arbitrarily, such as red circles or blue squares. These, of course, would have to be learned. We are in the early stages of developing a new method of training for such a task and in a few minutes I will take you next door where your job will be to teach a student a concept. I will explain this task now.

In front of you are 12 cards divided into four groups of 3 cards each. These four piles define the concepts you will try to get your student to learn. Now such a task can be made either very difficult or very easy depending upon what the basis for discrimination is.

Easy Task:

The discrimination or concept that you are going to have to teach your student is really quite simple, and if you look at the cards I think that you will readily see that it is based upon or has something to do with the expressions on the faces. I want you to tell me in your own words how you think the four groups differ (experimenter prompted if necessary to make the task seem simple).

Difficult Task:

The discrimination or concept that you are going to have to teach to your student is really quite difficult and if you look at the cards I think you will understand what I mean. I want

you to tell me in your own words how you think the four groups differ (negative responses were prompted until the experimenter finally had to show what the discrimination was).

Okay, now for the means by which you will teach. Since we want nothing but his responses to influence you, you will not see or talk to the student at any time. You will present the cards for approximately 10 seconds each through a slot in a wooden screen. The cards will be presented in random order according to a schedule I will give you. Your student has four response cards, one for each category, VOX, MIJ, ZIT, BAM. When he has made his answer you will have the option of five responses. These tokens represent money as they are marked, 10 cents, 5 cents, 0 cents, -5 cents and -10 cents. This form of reward and punishment is meaningful to the student since in addition to a base rate of pay, he will earn that amount of money represented by the plus tokens he receives and lose that amount of money represented by the minus tokens he receives.

To make it more interesting for you, your results, in other words, how well you teach the concept, will be compared with the others doing this task. This will be measured by the number of right responses on the last trial or by the number of trials it takes to reach a criterion level of two errorless trials. The task will be stopped after 10 trials whether or not your student has completely learned the discrimination.

Competent Students:

I should tell you a couple of things about your student. We have tested several groups of students on their ability to do

this type of task. Since we are developing a new method of training, we want to compare our results with written tests. We have selected a group of students who scored very high on the tests as well as another group who scored very low, and we are now testing them on our task to see if they differentially score high or low as on the written test.

Your student, let me see now (experimenter consulted list of names) scored very high on the written tests so that he should have an easy time with this task. Your teaching results will be compared only with others who also had easy students.

Noncompetent Students:

I should tell you a couple of things about your student. We have tested several groups of students on their ability to do this type of task. Since we are developing a new method of training, we want to compare our results with written tests. We have selected a group of students who scored very high on the tests as well as another group who scored very low, and we are now testing them on our task to see if they differentially score high or low as on the written test.

Your student, let me see now (experimenter consulted list of names) scored very low on the written tests so that he will probably have quite a bit of difficulty with this task. Your teaching results will be compared only with others who also had difficult students.

Remember, the use of the five different responses (tokens) is entirely up to your best judgment; the only thing you should do is to try to get him to learn the discrimination as quickly

as possible.

Okay, are there any questions? Let's go to the other room.

Upon completion of the instructions the teacher was taken to a room next door where the teaching was to take place. He was told that the student had already been instructed about the nature of the task. The teacher, of course, did not know that the student was a confederate, and his responses had been predetermined so that every teacher irrespective of task difficulty or his student's competence had the same response given to each stimulus card.

A trial consisted of the presentation of all 12 stimulus cards and each teacher completed 10 trials. At the end of each trial, the teacher had to order the cards for the next trial according to a random schedule with which he was provided. The correct responses of the student confederate were structured so as to simulate a slow learner's "learning curve." The following represents the number correct on the specified trials: 1,1; 2,1; 3,2; 4,2; 5,4; 6,4; 7,5; 8,5; 9,6; 10,6.

The experimenter sat behind the teacher through the first trial. If there were no questions, the experimenter then left the room. Since the teacher did not see the student or communicate orally with him, the student confederate, in addition to responding to the stimulus cards, recorded the reinforcements of the teacher.

RESULTS AND DISCUSSION

The positive and negative reinforcements of the teachers were analyzed separately. The positive reinforcement means for the eight experimental conditions are presented in Table 1, and the ANOVA is summarized in Table 2. One of the perils of employing small samples is that the data might come out as predicted, but not significantly so. Such is the case in our study. It is noteworthy that the only significant F ratio in Table 2 involves the interaction between anxiety and competence.

It is also important to note that, although not significant, the other simple interactions are the largest of the remaining F ratios, a result very much in line with the major hypothesis of this study. The means in Table 1 suggest what the nature of these interactions might be. The experimental condition with the least rewarding behavior is HEC, while the LDC and HENC conditions have the most rewards. These data are consistent with the hypothesis that, when the fearfulness of anxious teachers is aroused by below-par performance of competent students, diminished rewards are a consequence. Noncompetent students, however, would seem to bring out the generosity of these same teachers, particularly when the task is easy. The rewarding behavior of low anxious teachers would appear to be much less susceptible to task and student variables, with the possible exception of the LDC condition.

The nature of the interaction between teacher anxiety and student competence can be seen in Figure 1. It is quite obvious

that the expectancies for a competent student result in significant differences in the rewarding behavior of high anxious and low anxious teacher-trainees. The F ratio for the simple effect in this instance is 4.72 ($p < .05$, df = 1/32). Just as obvious too, the simple effect for the noncompetent condition is not significant.

The punitive behavior of the teacher-trainees is summarized in Tables 3 and 4. The results are somewhat disappointing in that only the main effect for anxiety is marginally significant ($.10 > p > .05$). Although there is the suggestion of a triple interaction, it remains just that, a suggestion. The most that can be said on the basis of the data in Tables 3 and 4 is that there would seem to be a tendency for high anxious teachers to use fewer negative sanctions than low anxious teachers.

While the generalizations that can be drawn from an exploratory study like this one are tentative at best, there are a few implications that are interesting and consistent with previous studies. When the data for rewards and punishments are looked at together, they indicate that low anxious teachers tend both to reward more and to punish more. The differential reinforcement of low anxious teachers is particularly noteworthy when the student is perceived to be competent. High anxious teachers tend to be just the opposite. They reward competent students less, but they also tend to punish less across all conditions. The net effect of high anxiety arousal in a teacher would seem to be reflected in a narrower range of reinforcing behaviors. In other words, teachers who are in situations or conditions

in which they fear failure tend not to use rewards and punishments as "effectively" as they might. This finding is consistent with various studies that have found anxiety arousal to interfere with or reduce variability in task performance.

Earlier in this paper we quoted Jones and deCharms (1957) to the effect that if teachers perceive the cause of their frustration to be within the control of the student, negative evaluation of such students would be more severe. The data from our study suggest that this viewpoint might have to be qualified in at least two ways. First, the need state of the teachers might be relevant to the perception of the frustration and might have to be clarified. Second, negative evaluations can be effected by a teacher through the withholding of rewards and by the application of punishments. The evidence from our study would support the notion that the two might not be used in the same way. Hence, the nature of the negative evaluation would have to be specified.

One thing should be remembered about our study--the student performance in each instance was exactly the same, but the sanctioning behavior of teachers varied considerably. Rosenthal and Jacobsen (1968) maintain that inducing in teachers an expectation of high ability for particular pupils results in greater intellectual gains for these pupils. However, the variables which mediate the improvement have remained rather murky. Lanzetta and Hannah (1969) speculate that the differential administration of rewards and punishments may depend on the perceived characteristics of the pupil, and it is this differential reinforcement that may

function to bring about the "Pygmalion" effect. In light of the variations (e.g., Conn et al, 1968; Claiborn, 1969) in replicating Pygmalion in the Classroom (Rosenthal and Jacobsen, 1968), we suggest that there might well be some payoff in looking at the characteristics of the perceiver.

REFERENCES

Claiborn, W.L. Expectancy effects in the classroom: A failure to replicate. Journal of Educational Psychology, 1969, 60, 377-383.

Conn, L.K., Edwards, C.N., Rosenthal, R., & Crowne, D.P. Emotion perception and response to teacher expectancy in elementary school children. Psychological Reports, 1968, 22, 27-34.

Dustin, D.S. & Davis, H.P. Authoritarianism and sanctioning behavior. Journal of Personality and Social Psychology, 1967, 6, 222-224.

Endler, N.S. & Hunt, J. McV. Sources of behavioral variance as measured by the S-R Inventory of Anxiousness. Psychological Bulletin, 1966, 65, 336-346.

Jones, E.E. & deCharms, R. Changes in social perception as a function of the personal relevance of behavior. Sociometry, 1957, 20, 75-85.

Lanzetta, J.T. & Hannah, T.E. Reinforcing behavior of "naive" trainers. Journal of Personality and Social Psychology, 1969, 11, 245-252.

Mandler, G. & Cowen, J.E. Test anxiety questionnaires. Journal of Consulting Psychology, 1958, 22, 228-229.

Milgram, S. Group pressure and action against a person. Journal of Abnormal and Social Psychology, 1964, 69, 137-148.

Rothbart, M. Effects of motivation, equity, and compliance on the use of reward and punishment. Journal of Personality and Social Psychology, 1968, 9, 353-362.

Rosenthal R. & Jacobsen L. Pygmalion in the Classroom. New York: Holt, Rinehart & Winston, 1968.

Sarason, S.B., Davidson, K.S., Lighthall, F.F., Waite, R.R. & Ruebush, B.K. Anxiety in Elementary School Children. New York: Wiley, 1960.

TABLE 1

MEAN POSITIVE REINFORCEMENTS GIVEN BY HIGH AND LOW ANXIOUS TEACHERS TO COMPETENT AND NONCOMPETENT STUDENTS ON EASY AND DIFFICULT TASKS

	High Anxious		Low Anxious	
Student/Task	Easy	Difficult	Easy	Difficult
Competent	317.0	331.0	369.0	419.0
Noncompetent	424.0	351.0	363.0	377.0

TABLE 2

ANOVA FOR POSITIVE REINFORCEMENTS

Source	df	SS	Mean Square	F
Anxiety (A)	1	6890.85	6890.85	1.61
Task (B)	1	15.85	15.85	.00
Competence (C)	1	3900.85	3900.85	.91
A X B	1	9454.90	9454.90	2.21
A X C	1	19139.90	19139.90	4.48*
B X C	1	9454.90	9454.90	2.21
A X B X C	1	1627.35	1627.35	.38
Within	32	136690.00	4271.56	
Total	39			

* $p < .05$

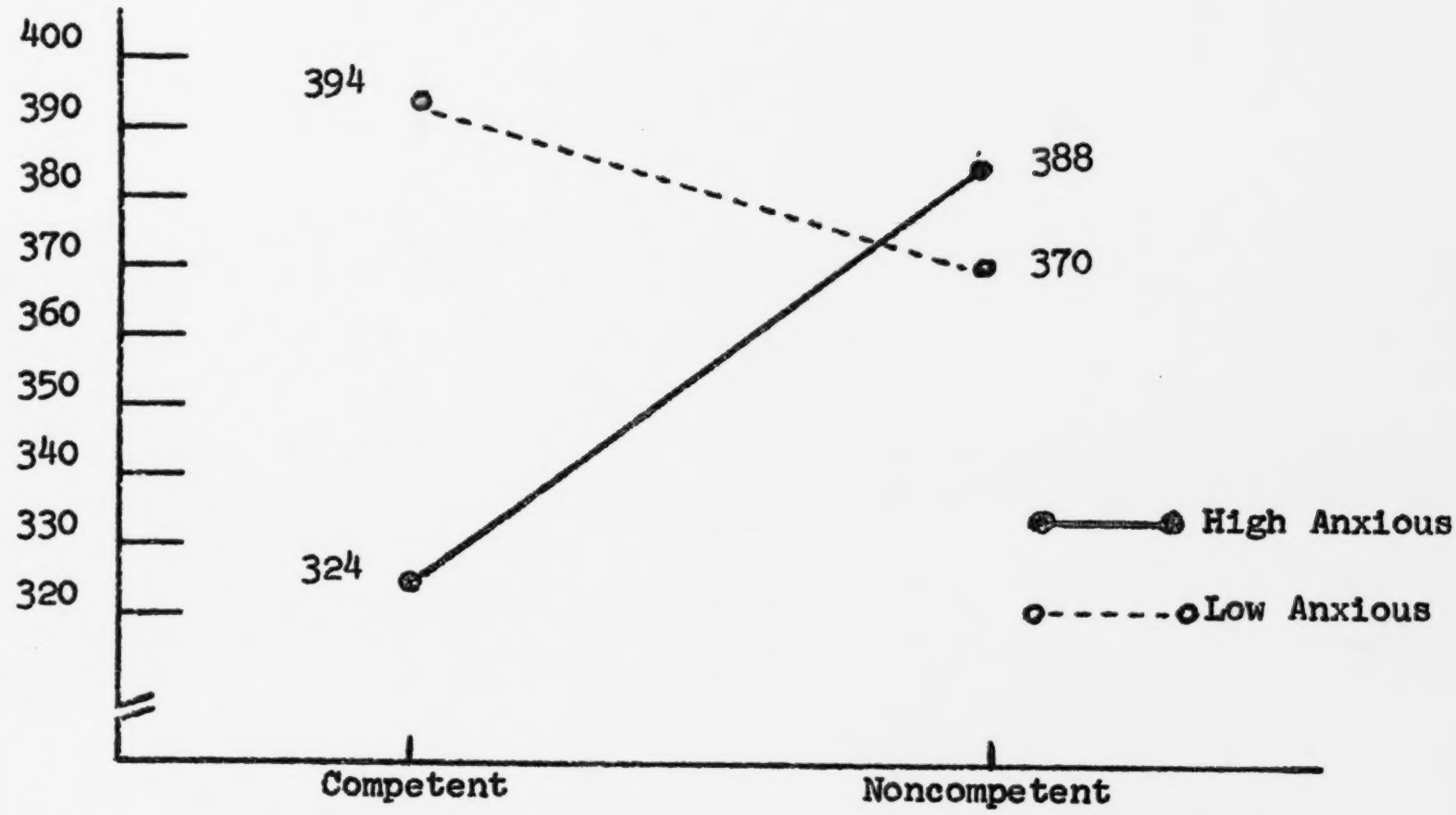

FIG. 1. Mean scores of positive reinforcements as a function of teacher anxiety and student competence.

TABLE 3

MEAN NEGATIVE REINFORCEMENTS GIVEN BY HIGH AND LOW ANXIOUS TEACHERS TO COMPETENT AND NONCOMPETENT STUDENTS ON EASY AND DIFFICULT TASKS

	High Anxious		Low Anxious	
Student/Task	Easy	Difficult	Easy	Difficult
Competent	178.0	234.0	369.0	241.0
Noncompetent	204.0	206.0	236.0	361.0

TABLE 4

ANOVA FOR NEGATIVE REINFORCEMENTS

Source	df	SS	Mean Square	F
Anxiety (A)	1	92640.62	92640.62	3.82*
Task (B)	1	1890.65	1890.65	.08
Competence (C)	1	140.65	140.65	.01
A X B	1	2325.60	2325.60	.10
A X C	1	75.60	75.60	.00
B X C	1	24750.60	24750.60	1.02
A X B X C	1	58905.65	58905.65	2.43
Within	32	775970.00	24249.06	
Total	39			

* $.10 > p > .05$